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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,532	02/27/2004	Yue Wu	030489	9469
23696	7590	06/01/2005	EXAMINER	
Qualcomm Incorporated Patents Department 5775 Morehouse Drive San Diego, CA 92121-1714			KINKEAD, ARNOLD M	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/789,532

**Applicant(s)**

WU, YUE

**Examiner**

Arnold M. Kinead

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 16 is/are rejected.
- 7) ☒ Claim(s) 14 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06-22-04 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because in figure 6, the connections are not shown. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Objections*

1. Claims 2 and 10 are objected to because of the following informalities: In the claims, the recitation for 'a first node coupled to the tuning voltage' should read—a first node coupled to the bias voltage—; and 'a second node coupled to the bias voltage' should read—a second node coupled to the tuning voltage—. Appropriate correction is required.

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*Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,2,3,5,6,7,9,10,11,13, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Friedman et al(US 6,292,065)

The reference by Friedman et al discloses a differential tunable VCO that is implemented in PLL systems with inherent divider, filter and phase detector. Figure 3 shows inductances(338,340),first and second varactor pairs(326,328; 322,324) arranged with the inductances to generate a output signals; a tuning voltage input(Vcon, 318,320) is shown, as well as independent/separate bias voltage inputs(366,368, 362,364) for each varactor with respective resistances. Note MOSCAP are used(MOSFETs configures as varactor elements) with gate, drain and source; the source connected to the drain and the first node of the varactor comprising the gate and the second node comprising the drain and source connection. The gate node is biased and the source/drain node is controlled by a tuning input(318,320). A constant input current source is shown(350) coupled to a pair of cross coupled

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transistors(346,348). Capacitors are shown coupled between the inductors(338,340) and varactors(326,328,322,324).

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4,8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friedman et al as applied to claims 1,2,3,5,6,7,9,10,11,13 and 16 above, and further in view of Kwek et al(US 6,774,736) and Chang(US 6,885,275).

The reference by Friedman et al discloses a differential tunable VCO that is implemented in PLL systems with inherent divider, filter and phase detector. Figure 3 shows inductances(338,340),first and second varactor pairs(326,328; 322,324) arranged with the inductances to generate a output signals; a tuning voltage input(Vcon, 318,320) is shown, as well as independent/separate bias voltage inputs(366,368, 362,364) for each varactor with respective resistances. Note MOSCAP are used(MOSFETs configures as varactor elements) with gate, drain and source; the source connected to the drain and the first node of the varactor comprising the gate and the second node

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comprising the drain and source connection. The gate node is biased and the source/drain node is controlled by a tuning input(318,320). A constant input current source is shown(350) coupled to a pair of cross coupled transistors(346,348). Capacitors are shown coupled between the inductors(338,340) and varactors(326,328,322,324).

The reference by Friedman et al does not show conventional resistor elements on the tuning voltage inputs nor does it suggest a differential to single ended converter for the output. With regards the resistance on the input tuning voltage, the reference by Kwek et al discloses a tunable oscillator that is used in a PLL, see figure 1 for PLL with conventional divider(120), detector(105), LPF(110), and VCO(115); the VCO, see figure 2, includes inductances(225), first and second varactor pairs(240) arranged with the inductances to generate a signal( $V_{n+}$ ,  $V_{n-}$ ); a tuning voltage input( $V_{con}$ ) is shown, as well as bias voltage inputs( $V_{ref}$ ) for each varactor. Note the resistor 246B that is relied upon for noise dampening, for example, see col. 4 last para.

The reference by Chang is being relied on to highlight the user of a differential to single ended output, see col 27, lines 5-10, noting that the choice for single ended output is conventional and depends on the input requirements of any downstream circuit circuits such as a divider for example, in the PLL loop.

In light of the above it would have been obvious for one of ordinary skill in the art to have recognized that the system of Friedman et al would be enhanced by using a resistor on the control input for noise dampening as suggested by Kwek et al and also, a single ended output may be required depending on the input requirements of downstream elements as suggested by Chang. This allows for the differential structure VCO with a correct output signal as required by the system designer.

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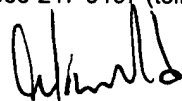
*Allowable Subject Matter*

5. Claims 14 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnold M. Kinhead whose telephone number is 571-272-1763. The examiner can normally be reached on Mon-Fri, 8:30 am -5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnold M Kinhead  
Primary Examiner  
Art Unit 2817

Arnold Kinhead  
May 27, 2005